

By (11).

$$\begin{array}{rcl}
 & 0 & ' \\
 51 & 25 & \\
 58 & 56 & 1.6599 \\
 62 & 45 & 1.9416 \\
 173 & 6 & \\
 86 & 33 & 16.5874 \quad 16.5874 \quad 16.5874 \\
 35 & 8 & 0.7037 \\
 & & 14.9275 \quad 14.6485 \quad 15.8837 \\
 & & 1804 \quad 26 \\
 & & 0 & ' & ' \\
 & & 51 & 24 & 45 \\
 - \frac{26929-381}{7942} = -3343 = - & & 55 & 43 \\
 & & + & 29 & 38 \\
 & & d = 50 & 58 & 40
 \end{array}$$

The "third correction" is here only 1".6, and the other corrections are evanescent.

The following formulæ are of the same class as (3), (4), (8), and (9):

$$\cos A = \frac{\cot(\frac{1}{2}s-b) + \cot \frac{1}{2}s - 2 \cot c}{\cot(\frac{1}{2}s-b) - \cot \frac{1}{2}s} = \frac{\cot(\frac{1}{2}s-c) + \cot \frac{1}{2}s - 2 \cot b}{\cot(\frac{1}{2}s-c) - \cot \frac{1}{2}s},$$

$$\text{vers } \sin A = 2 \cdot \frac{\cot b - \cot \frac{1}{2}s}{\cot(\frac{1}{2}s-c) - \cot \frac{1}{2}s} = 2 \cdot \frac{\cot c - \cot \frac{1}{2}s}{\cot(\frac{1}{2}s-b) - \cot \frac{1}{2}s},$$

$$\sin \frac{1}{2}A = \sqrt{\frac{\cot b - \cot \frac{1}{2}s}{\cot(\frac{1}{2}s-c) - \cot \frac{1}{2}s}} = \sqrt{\frac{\cot c - \cot \frac{1}{2}s}{\cot(\frac{1}{2}s-b) - \cot \frac{1}{2}s}},$$

$$\cos \frac{1}{2}A = \sqrt{\frac{\cot(\frac{1}{2}s-b) - \cot c}{\cot(\frac{1}{2}s-b) - \cot \frac{1}{2}s}} = \sqrt{\frac{\cot(\frac{1}{2}s-c) - \cot b}{\cot(\frac{1}{2}s-c) - \cot \frac{1}{2}s}},$$

$$\tan \frac{1}{2}A = \sqrt{\frac{\cot b - \cot \frac{1}{2}s}{\cot(\frac{1}{2}s-c) - \cot b}} = \sqrt{\frac{\cot c - \cot \frac{1}{2}s}{\cot(\frac{1}{2}s-b) - \cot c}},$$

where A is one of the angles of a spherical triangle, b, c the adjacent sides, and s the sum of the sides.

On the Spectrum of Brorsen's Comet, observed at the Royal Observatory, Greenwich.

(Communicated by the Astronomer Royal.)

Brorsen's Comet was examined with the half-prism spectroscope mounted on the Great Equatoreal on April 17, and subsequent evenings whenever the state of the sky allowed. The dispersion used was that of one compound "half-prism," equivalent to four flint prisms of 60° (20° from A to H) with a power of 12 on the viewing telescope.

The spectrum consists of the three usual cometary bands, corresponding to the three principal bands of the second spectrum of carbon, and does not present the anomalous appearance found by Dr. Huggins in 1868. The bands were compared on several evenings with those shown by a vacuum tube containing vapour of alcohol at a pressure of 1·2 m.m., and the coincidence appeared sensibly perfect.

The position of the brightest comet-band (in the green) was measured with Hilger's bright line micrometer on two evenings, April 19 and 28, by Mr. Maunder; on other occasions it was compared with the corresponding carbon-band indirectly by means of a movable bar in the eyepiece, 30 tenth-metres broad. The following are the results of the micrometer readings for the less refrangible edge of the comet-band referred to the centre of the brightest portion of the carbon-band, which (with a narrow slit) is less than 5 tenth-metres broad:—

1879.	Comet-band.	Wave-length inferred.	Width of slit. in.
April 19	0·5 tenth-metres to blue	5190	0·009 = 16 tenth-metres.
28	4·5 „ to red	5191	0·013 = 24 „

The wave-length of the less refrangible edge of the carbon-band (alcohol vapour in a vacuum tube) has been taken at 5198·3 tenth-metres. As it was not found practicable to use a narrower slit, there is probably an uncertainty of several tenth-metres in the position of the comet-band, but it appears from these observations that it coincides approximately with the band in the second spectrum of carbon (vacuum tube) at 5198, and not with that in the first spectrum (blue flame of Bunsen burner) at 5165. On April 17 several comparisons were made by Mr. Christie, by bringing up a movable bar from the blue end of the spectrum so as just not to hide the bright edge of the comet-band, and in every case the coincidence of the less refrangible edges of the comet- and alcohol-bands appeared sensibly perfect. In these observations the slit was of such a width that the bright line, with which the alcohol-band commences, had a breadth of about 30 tenth-metres. The principal comet-band extended about $\frac{2}{3}$ of the way towards F, to about wave-length 5,000, its blue end appearing to coincide approximately with a faint band of alcohol.

The second comet-band in the yellow was measured on April 28 by Mr. Maunder, and its red edge was found to be 2·4 tenth-metres to the red of the middle of the brightest part of the alcohol-band at 5610. The slit, however, was very wide, viz. 0^m·033, corresponding to 65 tenth-metres. This measure would place the red edge of the comet-band at 5580, whilst the band in the first spectrum of carbon is at 5635. The more refrangible end of the yellow band appeared to coincide with a well-marked band in the alcohol spectrum. The third comet-band was very faint; it appeared to be in the

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neighbourhood of the blue band of alcohol at 4835. The relative brightness of the three bands was estimated thus: Green, 10; Yellow, 3; Blue, $\frac{1}{2}$.

The comet has now decreased considerably in brightness, and its spectrum has become extremely faint. Unfortunately no observations were practicable before April 17, as the Great Equatoreal was in the workmen's hands for alterations to adapt it to more convenient use with the spectroscope.

The observations were made by Mr. Christie and Mr. Maunder.

Royal Observatory, Greenwich,
1879, May 9.

Observations of Brorsen's Comet. By Lord Lindsay.

1879, April 12, at 12^h 9^m S.M.T., the comet was well seen between clouds. It had a raylike tail, which could be traced for about 25' from the highly condensed nucleus. The coma was obviously elongated at right angles to the direction of the tail, its greatest diameter being about 5'. Clouds prevented further observations.

April 16, 10^h 30^m S.M.T., tail 10' long, in position 57°·8 by six measures with powers 122 and 229. No structure could be detected in the nucleus with powers 229 or 312.

April 17, 12^h 56^m S.M.T., tail 13' long, in position 51°·9 from three measures with power 122.

The spectrum was observed on April 16, May 2 and 3.

It consisted of three broad bands, the brightest parts of which had the following wave-lengths:—

	m.m.m.
No. 1	547·6
2	515·6
3	469·6

Nos. 2 and 3 were sharply bounded on the less refrangible side, fading off gradually towards the violet. No. 1 was very ill-defined on both sides, and, being without any definite brighter part, its wave-length is very uncertain. Observers, Ralph Cope-land and J. G. Lohse.

Dunecht, 1879, May 7.

Observations of Brorsen's Comet. By J. Tebbutt, Esq.

On Saturday evening, February 22, at 8 o'clock, I detected a faint nebulous object close to the position assigned to Brorsen's Comet in the Ephemeris of Dr. Schulze in the *Astronomische Nachrichten*, No. 2220. It presented the appearance of